IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent Application of:
Osamu Kurosawa et al.
Conf. No.: 6237 Group Art Unit: 1714
Applin. No.: 10/701,193 Examiner: Amy T. Lang
Filing Date: November 4, 2003 Attorney Docket No. 8305-234US
(61-0001-1)

Title: LOW VISCOSITY LUBRICATING OIL COMPOSITION FOR TRANSMISSIONS OF AUTOMOBILES

DECLARATION UNDER 37 C.F.R. § 1.132

I, Osamu Kurosawa, declare and state that:

1. I graduated from Tokyo Institute of Technology, Faculty of Engineering and Department of Chemistry Engineering and was conferred a master's Degree from the same institute.

I was employed by Nippon Oil Co., Ltd. in 1992 . Currently, I am employed by Nippon Oil Corporation, which is the assignee of the above-identified patent application in their Lubricants Research Laboratory, where I have been actively engaged in the research and development of lubricating oils, focusing on particularly lubricating oils for transmissions.

2. I am well acquainted with the field of lubricating oils and therefore conducted experiments described below on behalf of the assignee.

3. I have reviewed the Office Action dated March 6, 2007 in the above-identified application, and copies of U. S. Patent No. 6,482,778 B2 (Tersigni) and U.S. Patent Publication No. 2001/0044389 A1 (Koyama) which the Examiner has rejected all of the pending claims under 35 U. S. C. §103 (a). This Declaration has been prepared to address the arguments made by the Examiner in support of his rejections of the claims.

4. It is my understanding that the Examiner's positions are as follows. Tersigni discloses a transmission fluid composition comprised of base oils and phosphorus-containing additives, the

kinematic viscosity ranges of which base oil and the composition after adding a viscosity improver which can be used to obtain the desired viscosity overlap those recited in Claims 1 and 2. Further the phosphorus and sulfur content of Tersigni also each overlap those recited in Claims 1 and 2. However, Tersingi is silent as to the %Cp of the mineral oil used as base oils.

Komiya discloses a lubricating composition for transmissions composed of mineral oils, the kinematic viscosity of which oils overlaps those recited in Claims 1 and 2. Further Komiya teaches the oils having a %Cp of 70 or higher as defined by ASTM D 3238 and providing the composition having excellently low temperature fluidity by using specifically the oils with a %Cp from 75 to 81.

Therefore, it would have been obvious for a person skilled in the art to use a base mineral oil with a %Cp in the range of 75 to 81 in the transmission disclosed by Tersigni in order to achieve low temperature fluidity.

I argued in the previous response that the constituent features in the claimed composition, i.e., the %Cp of the base oil, phosphorus content, and sulfur content are each critical based on the description of the present specification.

However, the Examiner has maintained the rejection for the reason that these criticalities have not been demonstrated.

5. In order to overcome the current Examiner's rejection, I have amended the %Cp defined in Claim 2 presently on file to read as "a %Cp of from 73 to 82 defined by ASTM D 3238," for more clarifying the criticality of the %Cp of the base oil. Further I have amended (C) a viscosity index improver of the current Claims 1 and 2 to read as "(C) a viscosity index improver (VII) of dispersion type or non-dispersion type-polymethacrylates (PMA) having a number-average molecular weight (Mw) of from 5,000 to 35,000," for more elucidating the difference between the claimed composition and the prior art compositions.

6. Further, in order to demonstrate and prove the criticalities of the claimed phosphorus content and Mw of PMA (VII), I have conducted additional reference experiments in the same manner as that described in the specification. The compositions of Reference Examples 1- 3 were prepared by substituting the phosphorus content or Mw of PMA of the composition in Inventive Example 3 with those set forth in Table B

below, respectively and then were subjected to the SAE No.2 Test and Last Non-seizure Load Test to evaluate the performances in respect of the durability of shifting properties and extreme pressure property in the same manner as described at page 23, line 19 through at page 25, line 19 in the specification.

The experimental results are set forth in Table B below together with the results of Inventive Example 3 and Comparative Example 4 for comparison.

Table B

		Phosphorus Content				VII (PMA)	
		Comparative Example 4	Inventive Example 3	Reference Example 1	Reference Example 2	Inventive Example 3	Reference Example 3
Component (A)							
Base oil 1	mass%	63.7	63.6	63.6	63.3	63.6	63.6
Base oil 2	mass%	12.7	12.7	12.7	12.7	12.7	12.7
Base oil 3	mass%	8.5	8.5	8.5	8.5	8.5	8.5
Kinematic Viscosity of Component(A)	mm^2/s	3.0	3.0	3.0	3.0	3.0	3.0
%Cp of Component(A)		73	73	73	73	73	73
Component (B)							
Phosphorus Additive	mass%	0.1	0.2	0.26	0.4	0.2	0.2
Phosphorus Content in Composition	mass%	0.02	0.03	0.04	0.06	0.03	0.03
Sulfur Content in Component (B)	mass%	0	0	0	0	0	0
Component (C)							
Viscosity Index Improver (C-1)	mass%	10.7	10.7	10.7	10.7	10.7	
Viscosity Index Improver (C-2)	mass%						7.6
Kinematic Viscosity of Composition	mm^2/s	5.5	5.5	5.5	5.5	5.5	5.5
Sulfur Content in Composition	mass%	0.07	0.08	0.08	0.08	0.08	0.08
SAE No.2 Test							
Friction Coefficient after 500 cycles		0.11	0.12	0.13	0.13	0.12	0.12
Friction Coefficient after 2, 500 cycles		0.11	0.11	0.11	0.10	0.11	0.10
Last Non-Seizure load	N	392	618	618	618	618	490

Viscosity Index Improver (C-1): Non-Dispersion Type Polymethcrylate (Mw:20,000)
Viscosity Index Improver (C-2): Non-Dispersion Type Polymethcrylate (Mw:50,000)

7. It is apparent from the results set forth in Table B that the composition of Reference Example 1 for demonstrating the criticality of the phosphorus content exhibited slightly poor performance compared to that of Inventive Example 3 in respect of the durability of shifting properties evaluated by the SAE No.2 Test.

On the other hand, the composition of Reference Example 2 exhibited poorer performance than that of the composition of Reference Example 1 in respect of the durability of shifting properties evaluated by the SAE No.2 Test.

Further the composition of Reference Example 3 for demonstrating the criticality of the Mw of PMA (VII) exhibited poor performances compared to that of Inventive Example 3 in respect of extreme pressure property evaluated by the Last Non-Seizure Load Test.

As shown in the results of Reference Examples 2 and 3, the resulting composition has not the required performance in respect of the durability of shifting properties or extreme pressure property when the phosphorus content or Mw of PMA (VII) is deviated from each of the claimed ranges in Claims 1 and 2.

8. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 12/06/07 Osamu Kurosawa

Osamu Kurosawa